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As the State of Kansas is being developed, new mineral waters are being reported. Springs are discovered, or artesian wells are sunk, often yielding an abundant supply.

Naturally, the attention of the medical profession is called to these as possible curative agents, and we have reason to believe that as valuable waters may be found here as in neighboring States. But not only from a medicinal point of view may it be possible to utilize these waters. The industry of salt making already occupies a prominent position in some sections of the State, and only awaits more capital and the discovery of stronger brines to become of increased importance. We do not know to what extent beds of salt underlie the later rocks of the State. That it may become an important industry here may be gathered from the fact that in the vicinity of Syracuse, N. Y., over 9,000,000 bushels of salt are manufactured in a single season. There is certainly a home market for a large quantity of this material.

In some sections of the country mineral waters are utilized for the manufacture of Borax, of Bromine, and Iodine, and who shall say that even such rare elements as Lithium may not be found in paying quantities? It is well to remember that many substances now counted rare and of little value need but to be cheaply obtained to attain commercial importance.

While it is still a question whether the State has any extensive mineral deposits, and while we cannot boast of pure soft water, it may be possible in many other ways than these that have been briefly suggested, to utilize what we have, and thus aid in developing our latent resources.

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## ON THE COMPOSITION OF SOME CULINARY UTENSILS.

BY E. H. S. BAILEY.

Much attention is being paid in this country, and still more abroad, to the subject of food adulteration. Under the supervision of boards of health, elaborate examinations of food products are made, and careful tests are executed for suspected adulterations and falsifications. In the United States, some of the more populous States have enacted laws, and created boards for the special purpose of protecting the people against intentional fraud, and criminal carelessness. It is largely the province of the chemist and the microscopist to conduct these examinations. As our population increases, there is more and more temptation to fraud in this direction, so that ultimately all States must protect their citizens.

It often happens that the food itself is of good quality, but becomes poisoned by contact with the vessel in which it is cooked. This leads us naturally to direct attention to cooking utensils and their composition. It is generally conceded that iron and tin can be used for many purposes with perfect impunity. There are, however, cheap grades of tin plate that contain a noticeable quantity of lead. M. Fordos, (*Contes Rendue*, 79, No. 12,) cites the results of a series of experiments on such ware. Acetic acid, (1 per cent.,) red wine and lemonade, all contained lead after standing in the vessels for some time. Copper and brass can, with a reasonable amount of cleanliness, be used for many purposes, but should never be employed for heating any acid liquids. It is true that many housewives still recommend heating vinegar for pickles in a copper or brass kettle, because, forsooth, it gives them a "natural green" color. They have yet to learn that the copper compound thus formed is a dangerous poison, even if present in small proportions only. The writer had occasion to examine a green pickle for copper, and found  $\frac{1}{25}$  of a grain of the metal, equal to  $\frac{1}{4}$  of a grain of blue vitriol, in a pickled cucumber weighing a little over two ounces.

Cooking utensils, made of a soft and porous variety of earthenware, are much used

in some localities. This ware is covered with a glaze consisting essentially of silicate of lead. From carelessness in manufacture, the composition is by no means uniform.

I have instituted a series of experiments to determine, if possible, whether any danger could result from the use of these vessels in cooking.

I. About a pint of pure water was boiled in a clean, old earthenware vessel for 1½ hours, and no trace of lead was found in the water.

II. An equal quantity of vinegar (containing 33 per cent. of acetic acid) was boiled for some time in the same vessel, and from this solution .77 grains of oxide of lead, equivalent to 1.12 grains of sugar of lead, was obtained.

III. A 20-per-cent. sugar solution was heated for three hours in an old earthen vessel, and upon testing gave no lead.

IV. Apple sauce was heated for about twenty-four hours in an old vessel. This showed but a slight trace of lead.

V. Milk was allowed to stand for several days in an old vessel, and afterwards heated. Although thoroughly soured, it gave no evidence of containing lead.

VI. Experiments made with boiling water in a *new vessel* gave no lead.

VII. An experiment made with vinegar, heated for several hours in a new vessel, showed the presence of .25 grain of PbO, equal to .37 grain of sugar of lead.

VIII. A test made upon apple sauce heated in a new vessel gave no indication of lead.

IX. Lard was heated for twenty-four hours in a new vessel, and in this only the *slightest* trace of lead was to be detected.

From the above experiments I conclude that acid solutions should neither be heated nor allowed to stand in these vessels. When the vessel is old and the glazing becomes cracked, there is greater danger of lead poisoning consequent upon its use than in the case of a new vessel. It is always safer to thoroughly cleanse the new vessel before using, by washing with vinegar and water.

A class of ware known as granite ware, or marbled ware, has come into the market within a few years. This glaze, which is usually on sheet iron, generally consists of an insoluble silicate of a non-poisonous metal. Dr. Zinrek, of Berlin, has however analyzed the enamel of a stew-pan, which contained so much lead that 2½ grains of oxide of lead was found in a liter of vinegar which had been boiled in it for an hour. The author has found one specimen of glaze that contained a notable per cent. of zinc. Glazes of this class can however be made of such material that they may be used with perfect impunity. The whole subject is one deserving careful and unprejudiced consideration.

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## ARCHÆOLOGICAL NOTES.

BY GEO. S. CHASE, TOPEKA.

During the summer of 1880, the writer, while traveling through the mountain region north of Santa Fé, New Mexico, stopped over night at the village of Taos, near the ancient pueblo of Taos, at the base of the western slope of the Sangre de Christo range. Here he met an old schoolmate, who had been trading at the place for several years. The day before our arrival, a Pueblo Indian had stolen from the priest at the pueblo what he declared to be a greatly-revered god of the village, and offered it in trade for that greatest of evil tempters, the white man's firewater. Prompted by curiosity, my friend supplied the commodity demanded in exchange, and took possession of the god. Seeing that the article awakened my interest, he at once presented the deity to me, and upon the following morning I departed with it in my possession.

Some time later I passed through Taos again, on my return trip, and my friend in-